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South Carolina Department of Health
and Environmental Control

South Carolina Prepares: Pandemic Influenza Progress Report, 2007

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South Carolina Department of Health and Environmental Control
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Executive Summary

"Local preparedness must be the foundation of our national response. Communities that fail to prepare—expecting the federal government to come to the rescue—will be tragically mistaken." - *Michael Leavitt, Secretary, United States Department of Health and Human Services, June 13, 2007*

Preparing for disaster

South Carolinians must be prepared to respond to disasters. Each year, our coast is threatened by tropical storms and hurricanes. The most powerful earthquake in the Eastern United States struck Charleston in 1886. Each day, hazardous and radioactive materials are used in South Carolina's industries and transported by train and truck across the state. The menace of international terrorism continues, and comes close to home when two Egyptian men are arrested for transporting explosive materials in Goose Creek, South Carolina. Of all the threats that South Carolina faces, it is pandemic influenza that has the greatest potential for death and serious illness. In 1918, a deadly new strain of influenza swept in waves across America and the world. In the month of October 1918, over 3,600 South Carolinians died from influenza. Over 6,000 died as the epidemic ran its course, in a state population of approximately 1,600,000. Even with the tremendous advances in science and medicine since 1918, a deadly new strain of influenza could kill thousands in a matter of weeks.

Public Health Preparedness Efforts

Under the state's Emergency Operations Plan, the Department of Health and Environmental Control (SCDHEC) has major responsibilities for protecting health, coordinating medical care and responding to the environmental impacts of disasters. The Department has worked closely with representatives of hospitals, emergency medical services, health care provider organizations, law enforcement, emergency management, education and many others to prepare the state's Mass Casualty Plan that includes the Pandemic Influenza response plan. Planning for a pandemic requires that South Carolina's communities prepare to be self-sufficient, to identify and use local resources to last throughout many weeks of the spread of the disease. In a pandemic, all areas of the country may be affected at the same time. There may be few federal resources on which to count and it is estimated that 25% of the population, or over 1,000,000 of South Carolina's citizens, would be stricken in the first pandemic wave. State and local planning summits have been held to draw attention to the issue. Regional and county pandemic influenza plans have been drafted and exercised. Assessments of state and local capabilities for response have been conducted.

Department of Health and Environmental Control staff have presented educational programs and implemented a media campaign to educate partner organizations and the general public about the effects of a pandemic, how to reduce its spread and how to plan for it. SCDHEC has worked with many healthcare partners to prepare for the surge in medical care needs that can be expected in a pandemic and to

identify additional medical resources and alternate health care sites to cope with the huge swell of hospitalizations and persons seeking medical attention during a pandemic. The state has begun stockpiling antiviral medications, personal protective equipment, infection control supplies, medical supplies and equipment for use in a pandemic. Influenza surveillance and monitoring activities have been stepped up.

Non-recurring federal funding has been used to support state preparedness efforts. This year, FY 2007-08, is the final year of federal grant funding for pandemic influenza activities. The federal funding of $2,575,745 supports surveillance, stockpiling, planning, exercising and education efforts. An additional one-time grant of $1,098,346 supports hospital stockpiles of ventilators, medical supplies and medical surge exercises. During FY 2007-08, SCDHEC pandemic preparedness efforts will continue to focus on planning, providing information to the public and organizations, preparing to implement medical and social measures to minimize the effects of a pandemic, and stockpiling antiviral medications and medical equipment. Emphasis in the final year of the grant is on completing plans for continuity of operations, community containment, medical surge and mass fatality management.

A State Public Health Emergency Pharmaceutical Stockpile was established in FY 2006-07. Under a federal match program, South Carolina ordered 325,000 treatment courses of antiviral medicines for influenza, at a total cost of $6.6 million (of which $5 million were matching funds from the state.) Non-recurring state funds of $1.7 million were appropriated in FY 2007-08 for the purchase of 110,000 treatment courses, which completes the state's full allotment under the match program. In August, 2007, SCDHEC submitted as its top priority a state budget request for $2,872,897 in recurring funds and $1,838,400 in non-recurring funds to support ongoing pandemic influenza and public health emergency preparedness programs.

Pandemic Preparedness Efforts and Achievements

The Threat of Pandemic Influenza

Each influenza season, the "normal" flu affects the population in varying degrees of severity. In 2005, there were 762 deaths due to influenza and pneumonia in South Carolina. Influenza and pneumonia continue to rank among the ten leading causes of death in the state. Most influenza-related fatalities during the normal flu season are among the very old, the very young, people with chronic diseases and those with compromised immune systems.

Historically, about three times a century, an outbreak of influenza occurs with a virus that is new to the human immune system, resulting in a pandemic: the rapid worldwide spread of the disease. In about one-third of these outbreaks, a virus emerges which is particularly virulent, contagious, and lethal, such as the "Spanish Flu" of 1918 that killed approximately 550,000 Americans and 100 million people worldwide in less than eight months.

Experts at the World Health Organization (WHO) and Centers for Disease Control and Prevention believe that the world is now closer to another influenza pandemic than at any time since 1968, when the last of the previous century's three pandemics occurred. Since 2003, a deadly strain of avian influenza has spread among birds in Asia, Europe and Africa. The World Health Organization stated in 2007: "Never before in the history of this disease have so many countries been simultaneously affected, resulting in the loss of so many birds. The causative agent, the H5N1 virus, has proved to be especially tenacious. Despite the death or destruction of an estimated 150 million birds, the virus is now considered endemic in many parts of Indonesia and Viet Nam and in some parts of Cambodia, China, Thailand, and possibly also the Lao People's Democratic Republic. Control of the disease in poultry is expected to take several years."

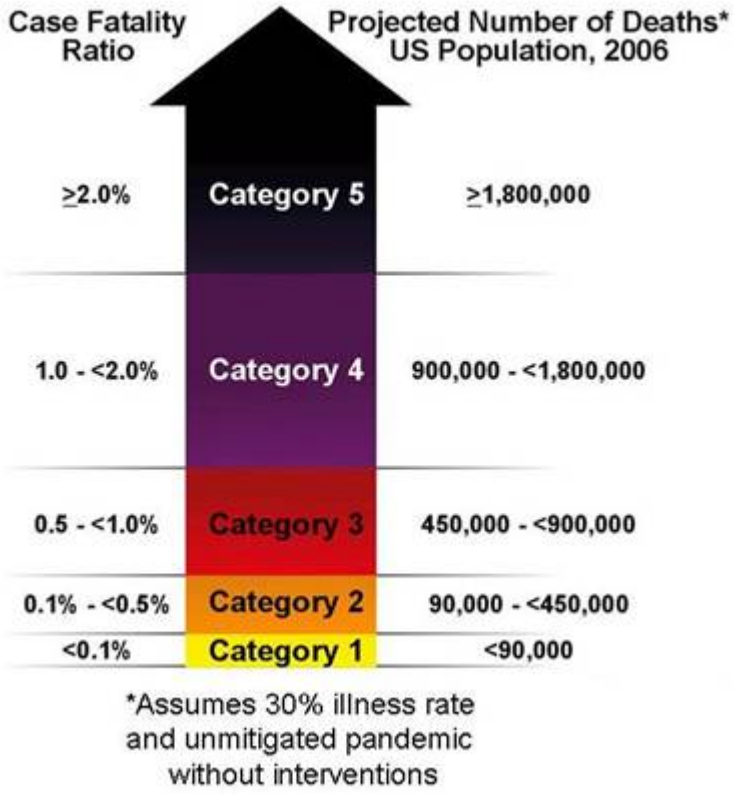
The H5N1 avian influenza virus is of particular concern for human health. Since 2003, there have been 330 laboratory-confirmed cases of the disease in people, and 202 deaths. The public health concern is that the virus will change into a form that spreads easily from person to person and triggers a worldwide pandemic of a very deadly disease. WHO uses a series of six phases of pandemic alert to inform the world of the seriousness of the threat and of the need for more intense preparedness activities. The world is presently in phase 3: a new influenza virus subtype is causing disease in humans, but is not yet spreading efficiently and sustainably among humans.

Pandemic Severity Index

In February 2007, the Centers for Disease Control released the "Community Strategy for Pandemic Influenza Mitigation" guidance. This document introduced a Pandemic Severity Index that describes five levels of pandemic from Category 1, Least Severe, to Category 5, Most Severe. The index is similar in concept to the Saffir-Simpson scale used to describe the severity of hurricanes. The pandemic scale is based on "case

fatality ratios" which are the ratio of deaths to cases. In a Category 1 Pandemic, the case fatality ratio would be less than one death per 1,000 cases. For a Category 5 Pandemic, the case fatality ratio would be greater than one death per 50 cases. Figure A illustrates the index and the projected number of deaths in the United States for each level.

Figure A. Pandemic Severity Index



The CDC guidance matched community strategies to the categories of severity and provided recommendations for which community containment measures to implement to reduce the spread of disease. Table A shows the CDC recommendations for the community actions that should be taken, depending on the severity of the pandemic. Interventions include Voluntary Isolation: staying at home when sick; Voluntary Quarantine: staying at home to care for a sick person; Child Social Distancing: closing schools to limit the spread among children; and Adult Social Distancing: canceling public gatherings, modifying workplace schedules and practices to limit the spread among adults.

Table A. Summary of the Community Mitigation Strategy by Pandemic Severity

Interventions* by Setting	Pandemic Severity Index		
	1	2 and 3	4 and 5
Home			
Voluntary isolation of ill at home (adults and children); combine with use of antiviral treatment as available and indicated	Recommend†§	Recommend†§	Recommend †§
Voluntary quarantine of household members in homes with ill persons¶ (adults and children); consider combining with antiviral prophylaxis if effective, feasible, and quantities sufficient	Generally not recommended	Consider **	Recommend **
School			
Child social distancing			
-dismissal of students from schools and school based activities, and closure of child care programs	Generally not recommended	Consider: ≤4 weeks††	Recommend: ≤12 weeks§§
-reduce out-of school social contacts and community mixing	Generally not recommended	Consider: ≤4 weeks ††	Recommend: ≤12 weeks§§
Workplace / Community			
Adult social distancing			
-decrease number of social contacts (e.g., encourage teleconferences, alternatives to face-to-face meetings)	Generally not recommended	Consider	Recommend
-increase distance between persons (e.g., reduce density in public transit, workplace)	Generally not recommended	Consider	Recommend
-modify, postpone, or cancel selected public gatherings to promote social distance (e.g., stadium events, theater performances)	Generally not recommended	Consider	Recommend
-modify work place schedules and practices (e.g., telework, staggered shifts)	Generally not recommended	Consider	Recommend

Generally Not Recommended = Unless there is a compelling rationale for specific populations or jurisdictions, measures are generally not recommended for entire populations as the consequences may outweigh the benefits.

Consider = Important to consider these alternatives as part of a prudent planning strategy, considering characteristics of the pandemic, such as age-specific illness rate, geographic distribution, and the magnitude of adverse consequences. These factors may vary globally, nationally, and locally.

Recommended = Generally recommended as an important component of the planning strategy.

What Might a Pandemic Look Like in South Carolina?

To estimate the potential impact of an influenza pandemic in South Carolina, the SCDHEC Division of Acute Disease Epidemiology has prepared statistical models using the Centers for Disease Control and Prevention FluAid and FluSurge software. The models estimate the number of hospitalizations and deaths, and the medical surge capacity that would be needed during an eight-week outbreak. Models were based on South Carolina's total 2006 population estimate of 4,320,593, with statewide totals of 11,764 licensed hospital beds, 1,176 Intensive Care Unit beds and 1,151 ventilators, a duration of eight weeks for first pandemic wave, and the assumption that 25% of the state's population would be ill during the first wave. It was estimated that the demand for hospital resources will peak at week five during the eight-week model. During week five, the following additional burden due to pandemic influenza-related cases will occur: an

increase of 433 hospital admissions per day, an additional 2,114 persons requiring hospitalization, an additional 612 requiring Intensive Care Unit beds, and an additional 306 requiring mechanical ventilation. These results for only week five translate into 20% of all hospital beds, 52% of all ICU beds, and 27% of all ventilators in South Carolina. These assets would be required for pandemic-influenza infected patients, over and above what is needed for all other hospitalized patients.

To summarize the total impact for the entire 8-week pandemic influenza wave demonstrated in this model, it is estimated that there would be 1,080,148 cases of flu, 14,616 hospital admissions and 2,898 deaths in South Carolina. It is important to remember that the statistical models produce a wide range of results, depending on what assumptions are used about the severity of the disease and its spread. The figures reported here are useful for planning purposes, but no one really knows in advance what a pandemic's impact will be.

What would this mean to our state?

Our already overburdened healthcare system would not be able to handle the enormous influx of people seeking medical care and needing hospitalization. Hospitals would not have enough beds, ventilators, or other medical supplies to care for the ill. This drain on the healthcare system would be compounded by physicians, nurses and other hospital staff being stricken with the illness, or staying at home to care for loved ones who are ill.

The federal government has estimated that 40% of staff within government entities and private sectors may be absent from work for about two weeks during the height of a pandemic. Employees may be out of work because they are sick, or caring for sick family members or for children who are out of school. Consider the implications of this rate of absenteeism on the ability of businesses and governmental entities, such as public works and emergency services to continue to provide essential services. Absenteeism may affect public utilities such as water and electricity, medical care and public health services, education, and care for special needs populations. Food supply, as well as other goods, may be affected due to the unavailability of truck drivers to drive for one to two weeks.

In a pandemic, it may become necessary for schools to close to prevent the spread of the disease. Depending on the nature of the pandemic, school closures might last for several weeks. If this measure is taken, then day care centers must also close in order to contain the disease. Employees will need to stay home to care for their children. Other steps to contain the spread of the disease might include canceling public events such as football games or concerts, closing public recreation facilities, closing office buildings and shopping centers. Travel may be restricted.

Because of the highly contagious nature of a pandemic, churches may need to use other means than normal church services to provide spiritual guidance to their congregations. Prevention of the close gathering of large groups of people will be one

way to contain the disease. The large numbers of deaths will present special challenges to the churches and to the state's coroners and funeral homes.

What Has Been Done to Prepare?

In 2006, pandemic preparedness efforts focused on planning and public awareness activities. Regional SCDHEC staff, in concert with local emergency management agencies, hosted pandemic summits, planning meetings and tabletop exercises to test county plans. Mass Casualty planning groups focused on improving medical surge capabilities. Educational programs were presented across the state: in FY 2006-07, there were 753 presentations with approximately 27,750 participants in attendance. Community outreach activities attempt to involve every sector in the planning process and preparedness efforts. In addition, SCDHEC expanded seasonal influenza surveillance to year-round reporting. State laboratory testing capabilities to identify new influenza viral strains were increased. A state stockpile of antiviral medicine was established. Mass vaccination clinics for seasonal flu were held to test emergency plans with real life experiences.

The public health preparedness program continues to follow the strategies developed by the State Pandemic Influenza Coordinating Council:

1. Regional and local planning summits with follow-on planning meetings to complete local community plans for the counties and major cities and exercise these plans;
2. Regional and local information-sharing meetings and community forums to promote awareness and preparedness in each of the following sectors: local government (counties and cities), education, business and agriculture, health care, faith-based organizations, community organizations, individuals and families.
3. A multi-media public awareness and preparedness campaign to inform and educate people about pandemic influenza prevention and preparedness measures and to alert the public and community leaders of the need to prepare local government and community plans;
4. Targeted multi-media campaigns and technical assistance to promote awareness and preparedness in each of the following sectors: local government (counties and major cities in metropolitan statistical areas), education, business and agriculture, health care, faith-based organizations, community organizations, individuals and families.
5. Establishment of state stockpiles of antiviral medication, personal protective equipment, infection control supplies, medical supplies and equipment for use in a pandemic or other public health emergency. Detailed planning for the efficient distribution of medicines and supplies from state and federal stockpiles.
6. Detailed planning for increasing the capacity of hospitals and medical care to care for a surge in the number of patients by use of hospital facility space, alternate care sites and mobile medical resources. Establishment of a health professional volunteer registration system and Medical Reserve Corps program to supplement health care manpower.

7. Expansion of disease surveillance activities and laboratory testing capacity for influenza-like illnesses.

The second phase of the CDC Pandemic Influenza Emergency Supplement began in September 2006, with a one-time $3,382,750 grant for FFY 2006-07. In 2007, priority was given to exercising and improving emergency plans, building the State Public Health Emergency Pharmacy stockpile, and increasing public awareness through multiple outreach activities. Funding was directed to regional preparedness activities, including planning summits, exercises, outreach efforts, and the hiring of regional pandemic influenza coordinators and public health clinical liaisons to work with communities and health care providers.

Major activities underway since September 2006 include:

- The State Pandemic Influenza plan was updated for the 2007 State Emergency Operations Plan. Detailed plans were submitted to CDC for Antiviral Distribution, Communications, Surveillance/Laboratory, Continuity of Operations, Mass Vaccination, and Community Containment/Mitigation.

- The Port of Charleston prepared a Pandemic Influenza plan to address the specific issues of the multiple state, federal and local partners responsible for operating the port.

- State and regional exercises were held to test Pandemic Influenza response plans. Mass vaccination exercises were held in October and November 2006. School closure exercises were held by a public health region in January 2007 and the state in February 2007. A state exercise of the Antiviral Distribution plan was held in July 2007. There were 15 pandemic tabletop exercises held by the eight public health regions with community partners since November 2006.

- A State Public Health Emergency Pharmaceutical Stockpile was established. Under a federal match program, South Carolina ordered 325,000 treatment courses of antiviral medicines for influenza, at a total cost of $6.6 million (of which $5 million is state matching funds). The shipment of the stockpile medicines arrived in May 2007 and is in temporary storage pending the completion of the stockpile facility. Non-recurring state funds of $1.7 million were appropriated in FY 2007-07 for the purchase of 110,000 treatment courses, which completes the state's full allotment under the match program. The order for the remaining allotment will be placed in November 2007.

- In addition to the state stockpile, the federal Strategic National Stockpile has allocated 618,000 treatment courses for South Carolina. When the federal allocation and the state stockpile are combined, there will be a sufficient supply to treat up to 25% of the state's population for pandemic influenza.

- Construction began on the State Public Health Emergency Pharmacy building in June 2007. The 5,000 square foot, climate-controlled stockpile facility is scheduled for completion by December 2007.

- A Speaker's Bureau was established to promote widespread public awareness of the possibility of pandemic influenza among community and business leaders. Six "train the trainer" sessions were held at the state level to prepare approximately 300 speakers for pandemic influenza presentations. Educational programs were presented across the state: in FY 2006-07, there were 753 presentations with approximately 27,750 participants in attendance. Presentations addressed a range of pandemic influenza issues from general education and awareness to specific guidance on continuity of operations planning and the use of personal protective equipment (PPE).

- The public information campaign, "What Do You Do to Prevent the Flu?" began airing on television and radio in October 2007 for the second year. The purpose is to increase public awareness and knowledge of ways they can prevent the spread of seasonal influenza. The messages promote vaccination, hand washing, cough etiquette, and staying home when sick. These are key messages for seasonal influenza, but are also important messages for a pandemic influenza. The campaign received national recognition with an award from the National Public Health Information Coalition.

- The Department published the "Preparing for Pandemic Flu" pocket guide to inform the public about the threat of a pandemic. The guide was published in English and Spanish and is available on the Department's website at http://www.scdhec.net/administration/ophp/pandemic_resources.htm. Over 25,000 copies of the pocket guides have been distributed to date.

- Under contract to SCDHEC, South Carolina Educational Television produced and aired two pandemic influenza programs in February 2007: the video "South Carolina Prepares: Pandemic Influenza," and a live panel discussion. A special broadcast on pandemic influenza was provided to the school system. Other pandemic influenza productions in process include a home care video for caregivers, a hand-washing video for school children, and public service announcements on pandemic influenza. These key educational and public awareness materials are for use now, and in the event of a pandemic.

- SCDHEC developed, produced and broadcast five pandemic influenza presentations addressing pandemic awareness, avian influenza, emergency measures, pandemic surveillance and the psychosocial aspects of a pandemic. Two more broadcasts, including one on home care of the pandemic influenza patient, are currently being produced. These satellite broadcasts can be received at 2,000 possible broadcast sites across the state, at businesses, colleges, schools, hospitals, law enforcement agencies and other state agencies. DVD copies of the broadcasts have been produced and are provided to agencies and businesses on

demand. Copies are also sent to the local SCDHEC regions to distribute to their planning partners.

- DHEC, Clemson University Livestock Poultry Health and the University of South Carolina Center for Public Health Preparedness conducted state and regional programs on "Avian Influenza Rapid Response Training: The Role of Public Health in a Multi-Agency Response to Avian Influenza in the United States." This training was prepared by the Centers for Disease Control and Prevention, the Council of State and Territorial Epidemiologists and the North Carolina Center for Public Health Preparedness. It was directed to state and local staff who may be involved in a response to both Low Pathogenic Avian Influenza (LPAI) and Highly Pathogenic Avian Influenza (HPAI). The purpose was to focus upon the public health and animal health response to both LPAI and HPAI detected among poultry. Should an HPAI event occur, public health and animal health front-line response staff will be required to detect and prevent potential cases of human and poultry infections and will find it essential to work with their counterparts to attempt to limit the spread of the disease.

- Each year, SCDHEC conducts disease surveillance for influenza and influenza-like illnesses. http://www.scdhec.gov/health/disease/acute/flu.htm Disease surveillance activities for influenza-like illness have been stepped up by recruiting additional providers to report.

- Laboratory testing capabilities and capacity have been increased. Laboratory testing is used to confirm the types of influenza circulating and to look for the emergence of novel viruses.

- DHEC maintains a Health Alert Network to quickly provide alerts and detailed information to health care providers about disease outbreaks or important health problems, including influenza.
  http://www.scdhec.gov/health/disease/acute/flualert.htm

- The South Carolina seasonal influenza plan is available at:
  http://www.scdhec.gov/health/disease/immunization/docs/fluplan.pdf
  This plan describes public health activities to prevent and monitor influenza.

- Each year, SCDHEC has a seasonal influenza vaccination campaign to encourage people in high risk groups to get flu shots. The risk for complications, hospitalizations, and deaths from influenza are greater among persons 65 and older, young children, and people with certain chronic diseases including diabetes, asthma and heart disease.

- South Carolina hosted a meeting of eight southeastern states to address interstate issues related to pandemic influenza. This meeting was the first of its kind for pandemic planning in our region and afforded the southeastern state health

departments and related agencies a chance to review planning activities and capture areas of concern for cross-jurisdictional pandemic planning.

What More Should Be Done?

This year, FY 2007-08, is the final year of federal grant funding for pandemic influenza activities. The federal funding of $2,575,745 supports surveillance, stockpiling, planning, exercising and education efforts (Table B). An additional one-time grant of $1,098,346 supports hospital stockpiles of ventilators, medical supplies and medical surge exercises. During FY 2007-08, SCDHEC pandemic preparedness efforts will continue to focus on planning, providing information to the public and partner organizations, preparing to implement medical and social measures to minimize the effects of a pandemic, and stockpiling antiviral medications and medical equipment. Emphasis in the final year of the grant is on updating and completing plans for continuity of operations, community containment, medical surge and mass fatality management.

- **State funding is needed to support the Public Health Emergency Pharmaceutical Stockpile.** Secure receipt, storage and shipping facilities must be built, with the capacity to serve as a receiving and distribution site for the federal Strategic National Stockpile. The first phase of construction, the State Public Health Emergency Pharmacy stockpile facility, is scheduled for completion by December 2007. Funding is needed for the second phase of construction: the 15,320 square foot Strategic National Stockpile Receipt, Storage and Staging Site. This facility is designed to provide a secure site for the storage of emergency equipment and supplies, and emergency trailers and response vehicles currently stored in an open air site at State Park with limited security. In the event of a major disaster, the building will serve as the Receipt, Storage and Staging (RSS) Site and distribution center for supplies and equipment sent by the Strategic National Stockpile. The entire building must meet federal specifications in order to qualify as a Strategic National Stockpile Receipt, Storage and Staging Site. During emergency operations, this site will be a distribution center for large quantities of emergency medical supplies and medicines and will function as an extension of the Public Health Emergency Pharmacy. Recurring funding is needed to purchase medicines, vaccines and infection control supplies, to rotate stock when medicines and vaccines expire, and to operate the stockpile facility. The stockpile represents an ongoing program to assure that South Carolina has resources on hand to treat its citizens in the event of a pandemic influenza or other major disease outbreak and to support medical surge and emergency response.

- **The state must be prepared to purchase large quantities of influenza vaccine and to quickly vaccinate large numbers of people.** Human vaccines have been developed for protection against the pre-pandemic H5N1 avian influenza virus. At this time, one vaccine has been licensed by the Food and Drug Administration for the pre-pandemic H5N1 influenza virus. Several manufacturers have H5N1 vaccine in production, and the US Strategic National Stockpile has purchased or placed orders for approximately 12 million doses. Unfortunately, a specific

vaccine for a pandemic influenza strain cannot be developed until after the pandemic strain emerges: it might be a different type of influenza than H5N1. In any case, when there is a pandemic, South Carolina must be ready to buy vaccine and use it.

Table B. Funding for Pandemic Influenza, Public Health and Hospital Preparedness Programs in South Carolina, Federal Fiscal Years 2005 to 2008				
Federal				
	FFY 2004-05	FFY 2005-06	FFY 2006-07	FFY 2007-08
CDC Public Health Emergency Preparedness (base grant)	$12, 091,813	$12,108,891	$10,652,835	$9,179,430
ASPR Hospital Preparedness Program (base grant)	$7,146,769	$6,789,755	$6,632,258	$5,978,140
CDC Pandemic Influenza Supplement (non-recurring)		$1,508,881	$3,382,750	$2,575,746
ASPR Hospital Pandemic Influenza Supplement (non-recurring)				$1,098,346
State and Other				
State (non-recurring) for antiviral purchase				$1,705,636
Other (non-recurring) for antiviral purchase and stockpile construction			$5,988,000	

- **Reductions in federal funding for public health preparedness are causing instability in the Department's preparedness efforts.** Federal funding for the Centers for Disease Control Public Health Emergency Preparedness base program has dropped from $13.9 million in FY 2002-03 to $9.2 in FY 2007-08, a loss of 34% in five years. The state program reduced staffing by 19 FTEs and over $1,000,000 this year. The federal public health and hospital preparedness grants have been divided into small, single-purpose grants as a result of the national Pandemic and All Hazards Preparedness Act of 2006. Many of these grants, including the pandemic influenza funds, are one-time, non-recurring funds. One-time federal funding cannot be used to sustain public health capacity to respond to

an unpredictable event like a pandemic. Sustained, recurring state funding is needed for public health preparedness efforts.

- **SCDHEC is designated as the primary agency for Emergency Support Functions (ESF) 8 (Health and Medical) and 10 (Hazardous Materials) in the state Emergency Operations Plan.** The agency serves in this capacity for planning and response to all state level emergencies and disasters. This includes providing response in the state emergency operations center coordinating the provision of medical care, public health and sanitation, behavioral health and deceased identification and mortuary services in its role as lead agency for ESF-8. Additionally SCDHEC is the primary, or lead, agency in the ESF 10 planning and response to the release of hazardous materials into the environment during an emergency or disaster, including response to disasters involving fixed facilities such as nuclear facilities, laboratories, hazardous waste sites, and spills in railway, air or roadway mishaps.

  State funding to provide the staff to plan and coordinate SCDHEC's response is currently limited to one employee and half-time funding for another. For the past five years, federal funding has supported additional personnel at both the state and regional level to coordinate emergency response and planning functions for health and environmental protection of South Carolinians. **Beginning next federal fiscal year, this federal funding will be sustained only with additional matching state funds.**

The Plan to Improve the State's Readiness Condition

Key objectives in South Carolina's FY 2007-08 work plans for the Pandemic Influenza, hospital and public health preparedness programs include:

- Promoting the development of continuity of operations plans by government and business.

- Preparing guidelines for school closure and other community disease containment measures and informing the public about isolation, quarantine and disease control measures.

- Improving plans for mass vaccination to prevent the spread of influenza and for distribution of medicines to treat pandemic influenza.

- Raising public awareness of influenza prevention measures and providing information on home care for influenza patients.

- Planning and preparedness measures for surge capacity and staffing issues for hospitals, primary care and home health care.

- Improving infection control practices, plans and procedures in public health and medical care systems.

- Planning for and developing caches of medicines, vaccines, medical supplies and equipment for use in a pandemic.

- Improving influenza surveillance and information systems for disease reporting, tracking, and disease control response.

- Improving laboratory capacity for influenza testing.

- Promoting registration and training of volunteer health professionals to serve in emergencies.

- Defining and addressing the needs of high risk and special populations.

- Formalizing interstate mutual assistance agreements and coordination among southeastern states.

- Exercising state and regional pandemic influenza emergency plans to identify and fix gaps.

- Engaging law enforcement personnel in planning and training for response to pandemic influenza.

- Improving plans for responding to mass fatalities.

- Preparing for the psychological consequences of a pandemic that causes widespread illness and mass fatalities.

Conclusion

Significant progress has been made in preparing for an influenza pandemic in South Carolina, but much work remains to be done to improve the state's readiness condition. The focus of preparedness efforts during the next year will be on promoting pandemic preparedness planning in the health and medical, business, agriculture, education, and faith community sectors; promoting individual and family awareness of influenza prevention, home care, and preparedness; establishing the state public health emergency pharmaceutical stockpile and hospital stockpiles of ventilators and medical supplies; strengthening public health disease surveillance and response capabilities; and strengthening medical surge capacity.

The threat of an influenza pandemic is real. There is great uncertainty about when the next pandemic will occur, how serious the disease will be, and how effective the measures to contain the disease will be. Our challenge is to prepare for the worst case and take prudent measures now to protect the health of South Carolinians.

Chronology of Key Events in the H5N1 Avian Influenza Outbreak (from World Health Organization), National Pandemic Influenza Preparedness, and South Carolina's Pandemic Influenza Preparedness	
1997	Outbreaks of highly pathogenic H5N1 avian influenza are reported in poultry at farms and live markets in Hong Kong. Human infections with H5N1 influenza are reported in Hong Kong. Altogether, 18 cases, 6 of them fatal, are reported in this first known instance of human infection with this virus.
April 2000	**SC DHEC prepares a draft response plan for pandemic influenza.**
May 2002	**South Carolina begins major expansion of public health preparedness activities under Centers for Disease Control "Public Health Preparedness and Response for Bioterrorism Program" and Health Resources and Services Administration "Bioterrorism Hospital Preparedness Program."**
February 2003	Two cases of H5N1 in a Hong Kong family, one fatal. A third family member died of respiratory illness, but no samples were taken.
Mid 2003	Animal outbreaks of H5N1 occur in Asia, but go unreported.
July 2003	**DHEC hires an epidemiologist to oversee increased disease surveillance for influenza and respiratory illnesses.**
December 2003	Outbreak in poultry is reported in South Korea.
January 2004	Viet Nam reports H5N1 in poultry. Sporadic human cases of H5N1 are reported, with severe respiratory disease and high fatality rates. Outbreaks in poultry are reported by Japan, Thailand, Cambodia and Laos.
February 2004	Outbreaks in poultry are reported by Indonesia and China.
March 2004	Reports of human cases continue. Confirmed cases include 12 in Thailand, with 8 fatal; and 23 in Viet Nam, 16 fatal.
Fall 2004	Human cases are reported from Viet Nam, Thailand
November 2004	**Pandemic Influenza Plan is officially included in South Carolina State Emergency Operations Plan**
January 2005	Human cases in Viet Nam, Thailand.
February 2005	First human case in Cambodia.
April 2005	Die-off of wild birds at Qinghai Lake in central China.
July 2005	First human case reported in Indonesia. Avian outbreaks in Russia
August 2005	Avian outbreaks in Kazakhstan, Tibet, Mongolia.
October 2005	Avian outbreaks in Turkey, Romania, Croatia, China. More human cases confirmed in Indonesia and Thailand.
October 2005	CDC announces successful research to reconstruct the 1918 pandemic influenza virus, concludes that the virus was avain in origin and has some similarities to the H5N1 strain.
November 2005	US Department of Health and Human Services releases National Pandemic Influenza Plan. President Bush announces National Strategy for Pandemic Influenza. China reports first two human cases of H5N1. **South Carolina expands the State Bioterrorism Advisory Committee to serve as the state's Pandemic Influenza Coordinating Council.**

December 2005	National summit meeting of state health officers was held to announce national campaign to prepare for pandemic influenza. US Department of Health and Human Services Secretary announces a fifty-state tour of pandemic influenza summit meetings to increase state preparedness efforts.
January 2006	Turkey and Iraq report first human cases. Poultry outbreaks occur in Turkey.
February 2006	Indonesia continues to report human cases: 25 cases and 18 fatalities. China reports 12 human cases and 8th fatality. H5N1 is confirmed in wild birds in Azerbaijan, Bulgaria, Greece, Italy, Iran, Austria, Germany, France, Hungary, Slovakia, Bosnia-Herzegovina and Georgia and in poultry in Iraq, Nigeria, Russia, Egypt, India, Malaysia, France and Niger.
March 2006	First human cases are reported in Azerbaijan and Egypt. H5N1 is confirmed in wild birds in Switzerland, Montenegro, Poland, Denmark, Sweden and the Czech Republic and in poultry in Albania, Cameroon, Myanmar, Afghanistan, Israel, Pakistan, and Jordan.
March 2006	**South Carolina holds "South Carolina Prepares: Pandemic Influenza State Summit" meeting. Governor Sanford signs proclamation to work with DHHS to prepare for pandemic influenza in South Carolina.**
May 2006	**South Carolina receives Phase I Pandemic Influenza supplemental funds of $1.5 million for planning, exercises and preparedness initiatives.**
May 2006	US Department of Homeland Security releases National Strategy for Pandemic Influenza: Implementation Plan that describes the roles of federal agencies in response to pandemic influenza.
May-October 2006	Human cases of H5N1 influenza continue to occur on a sporadic basis in Indonesia, Egypt, China, Thailand. As of October 16, 2006, World Health Organization reported 256 cases and 151 deaths from 2003 to date. The disease is not yet easily transmitted from person to person. Avian disease continues to be widespread in Asia, Europe and Africa in wild birds, with sporadic outbreaks in domestic poultry. It has not yet reached North America or South America. Extensive monitoring of wildlife and commercial poultry is conducted in the US and Canada to detect H5N1.
June – October 2006	**South Carolina holds regional and county summits to develop county and city pandemic influenza plans and hold exercises. Numerous presentations are made at meetings and conferences to promote planning and preparedness by government agencies, business, schools and faith communities.**
July 2006	**South Carolina sends a letter of intent to participate in the federal match program for purchase of antiviral medicines for a state stockpile.**
August 2006	**Phase II Pandemic Influenza grant proposal submitted to Centers for Disease Control. South Carolina received $3,282,750 for planning, exercises and other pandemic influenza preparedness activities.**

September 2006	**Initial orders are placed for antiviral medicines for South Carolina state stockpile. 325,000 treatment courses were ordered, with anticipated delivery by March 2007.** **Multiple state and federal agencies in South Carolina-Clemson University, Department of Natural Resources, South Carolina Department of Agriculture, US Department of Agriculture Wildlife Services and Veterinary Services and SCDHEC announce increased surveillance for avian influenza in wild birds and domestic flocks.**
October 2006	**The "What Do You Do To Prevent the Flu?" public information campaign was launched at the South Carolina State Fair. Brochures and public service announcements on television and radio promote vaccination, hand washing, cough etiquette and staying home when sick as ways to prevent the spread of seasonal flu. These and additional materials will be used for public information in a pandemic situation.**
October 2006	US Department of Health and Human Services releases "Interim Guidance on Planning for the Use of Surgical Masks and Respirators in Health Care Settings during an Influenza Pandemic."
November 2006	**Regional mass vaccination clinics are held to exercise emergency plans.**
November 2006	Avian influenza reported in Korea (first since September 2004)
November 2006 - December 2006	Sporadic human cases confirmed in Indonesia, China and Egypt.
December 2006	Widespread avian influenza outbreaks in Vietnam
January 2007 – October 2007	Avian influenza in wild birds or poultry reported in Japan, Hong Kong, Thailand, Viet Nam, Hungary, Russia, United Kingdom, Indonesia, Pakistan, Turkey, Laos, Afghanistan, Kuwait, Myanmar, China, Bangladesh, Saudi Arabia, Cambodia, Ghana, Malaysia, Czech Republic, Togo, Germany, France, and India.
January 2007 – October 2007	Human cases confirmed in Indonesia, Egypt, Nigeria, Laos, China, Cambodia, and Vietnam. Through October 8, 2007, 67 cases and 44 deaths were reported in 2007. There were 330 total cases since 2003, and 202 deaths: a case fatality ratio of 61.2 deaths per 100 cases.
February 2007	**SC ETV produces and broadcasts a pandemic influenza documentary.**
February 2007	Centers for Disease Control releases "Interim Pre-Pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States." Occupational Health and Safety Administration releases "Guidance on Preparing Workplaces for Pandemic Influenza."
February 2007	**South Carolina holds a state level tabletop exercise on school closure to discuss the implications for education and the community and identify planning issues.**
March 2007	**South Carolina hosted a meeting of eight Southeastern States to discuss key interstate issues in pandemic preparedness, including legal issues, public information, and disease control measures.**
April 2007	Food and Drug Administration approves a human H5N1 vaccine. 12 million doses to be stockpiled by US Government.

April 2007	**SCDHEC submits required pandemic influenza plans for review by the Centers for Disease Control and other federal agencies.**
May 2007	**South Carolina receives initial shipment of 325,000 treatment courses of antiviral medicines for the state stockpile.**
May 2007	US Department of Health and Human Services releases "Interim Guidance for the Use of Facemasks and Respirators in Public Settings During an Influenza Pandemic."
July 2007	**South Carolina holds a state level tabletop exercise to test receipt and distribution of Strategic National Stockpile antiviral medicines.**
August 2007	US Department of State releases "North American Plan for Avian and Pandemic Influenza."
September-October 2007	**DHEC, Clemson University Livestock Poultry Health and the University of South Carolina Center for Public Health Preparedness conducted state and regional programs on "Avian Influenza Rapid Response Training: The Role of Public Health in a Multi-Agency Response to Avian Influenza in the United States." This training was prepared by the Centers for Disease Control and Prevention, the Council of State and Territorial Epidemiologists and the North Carolina Center for Public Health Preparedness. It was directed to state and local staff who may be involved in a response to both Low Pathogenic Avian Influenza (LPAI) and Highly Pathogenic Avian Influenza (HPAI). The purpose was to focus upon the public health and animal health response to both LPAI and HPAI detected among poultry. Should an HPAI event occur, public health and animal health front-line response staff will be required to detect and prevent potential cases of human and poultry infections and will find it essential to work with their counterparts to attempt to limit the spread of the disease.**